

IN SITU AND SATELLITE MEASURED TEMPERATURE COMPARABILITY

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Following the International Geophysical Year in the late 1950's, small meteorological rockets caught the interest of scientists as a potentially inexpensive method to obtain meteorological information (density, temperature, wind) above balloon-borne radiosonde altitudes. These small rocketsondes have served many important observational roles in terms of studies conducted of atmospheric structure and processes, enabling many new ideas about the atmosphere to emerge. Although no longer manufactured a small residual inventory of meteorological rocketsondes exist for specific research projects. The value of data from meteorological rocketsondes is without question but with their disappearance data from many different satellites are filling the need, some able to resolve high-altitude temperatures quite well. However, the rocketsonde vertical profile is more localized to the launch site whereas satellites move several kilometers per second. The objective of this presentation is to compare in situ temperature data with remotely measured/retrieved temperature data. There have been a number of U.S. conducted missions utilizing the passive falling sphere data that we use to verify the comparability of retrieved temperatures from these satellites. Missions, some as early as 1991, were conducted in polar, equatorial, and mid-latitude locations. An important aspect is that a single satellite profile compared to a falling sphere profile often does not agree while high density satellite measurements when averaged over an area near the rocketsonde data area seems to be in better agreement. Radiosonde temperature data are used in the analysis when appropriate.